

Delta Plan Chapter 4 Amendment Protect, Restore, and Enhance The Delta Ecosystem Summary of Science Synthesis Papers

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Sacramento, CA

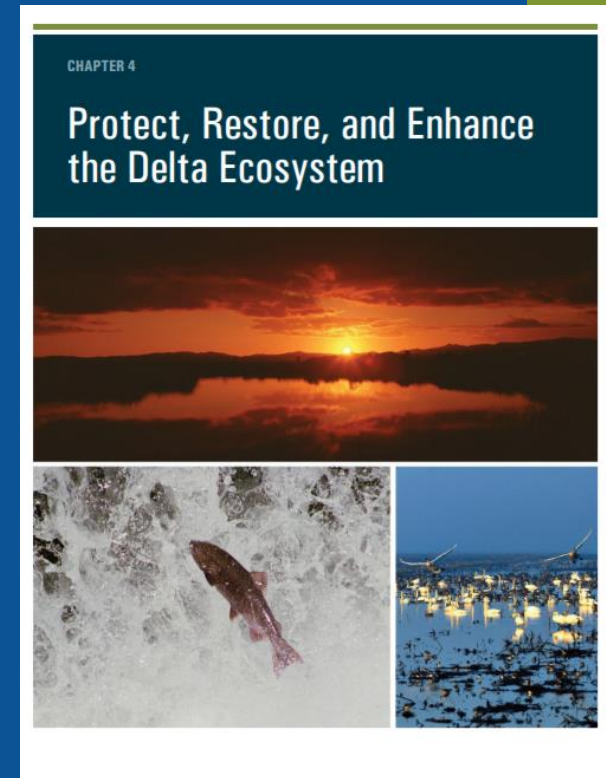


Council Planning Staff – Interdisciplinary Eco-Amendment Team:

- Kate Anderson, Sr. Environmental Planner
- Megan Brooks, Environmental Scientist
- Lita Brydie, AG Program Analyst
- Dan Constable, Sr. Environmental Scientist
- Cory Copeland, Environmental Scientist

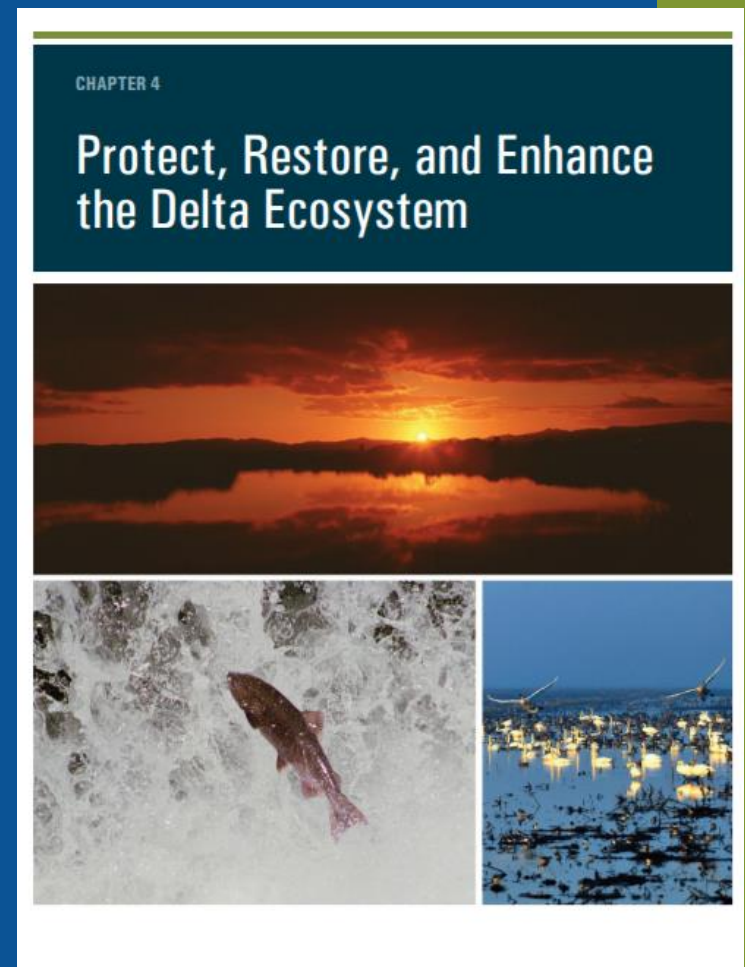
Delta Reform Act 2009:

- **Coequal Goals**
- **Key Ecological Outcomes:**
 - Viable populations of native resident and migratory species
 - Functional corridors for migratory species
 - Diverse and biologically appropriate habitats and ecosystem processes
 - Reduced threats and stresses on the Delta Ecosystem
 - Conditions conducive to meeting or exceeding recovery plans and salmon doubling
- **Restoration Strategies**
 - Restore large areas of interconnected habitats within the Delta and its watershed by 2100.
 - Establish migratory corridors for fish, birds, and other ecosystems.
 - Improve water quality for drinking, ag, and ecosystem
 - Restore habitat necessary to avoid a net loss of migratory bird habitat and, where feasible, increase migratory bird habitat to promote viable populations of migratory birds.
- **Best available science**
- **Quantified or measureable targets**
- **Science-based, transparent, and formal adaptive management strategy**



Delta Plan (2013)

- Create more natural functional flows
- Restore habitat
- Improve water quality to protect the ecosystem
- Prevent introduction of and manage non-native species impacts
- Improve hatcheries and harvest management



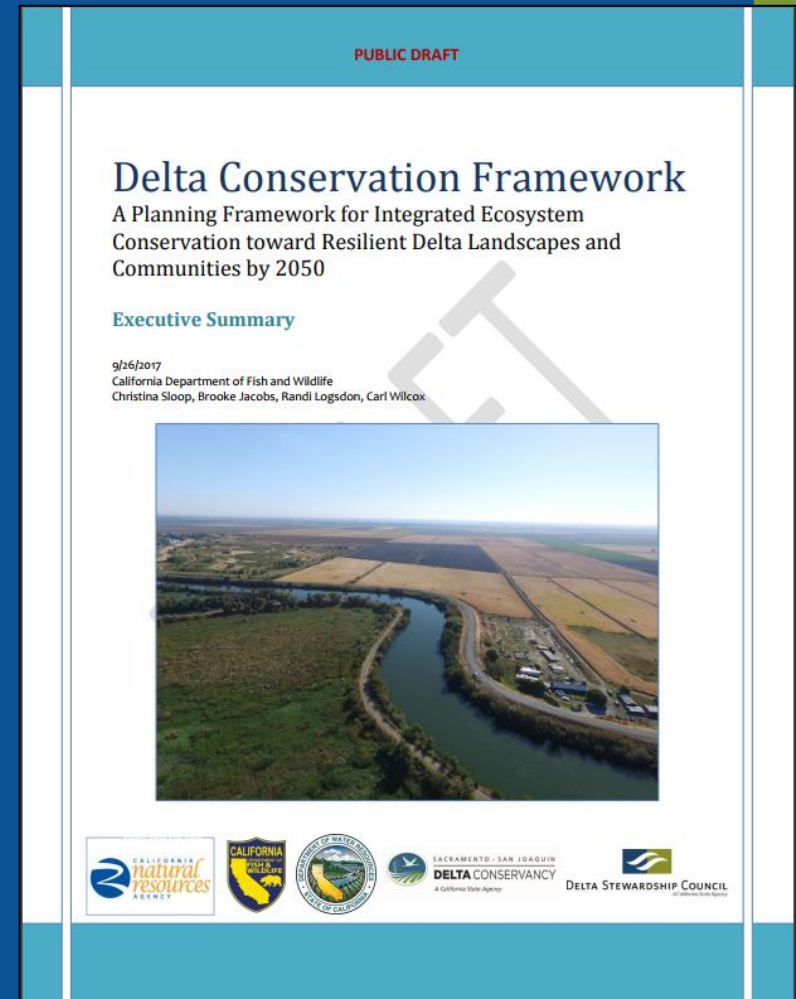
Water Code Section: 85020 & 85054:

Protect and enhance the unique cultural, recreational, and agricultural values of the California Delta as an evolving place

Pivotal Events Since 2013

Implementation through major initiatives and programs

- California Water Action Plan (2014)
- Exec Order B-30-15 (2015)
- Rising Seas in California (2017)
- Adapting to Rising Tides (2015)
- Delta Conservation Framework (2016)
- California EcoRestore (2015)
- California Water Fix (2015)
- Prop 1 Water Bond (2014)
- Delta Transformed (2014)
- Delta Renewed (2016)
- State of Bay Delta Science (2016)



Delta Plan Amendments:

- Conveyance, Storage, and Operations
 - Delta Levees Investment Strategy (DLIS)
 - Performance Measures
- Ecosystem Amendment

CHAPTER 4

Protect, Restore, and Enhance the Delta Ecosystem



Ecosystem Amendment - Scope

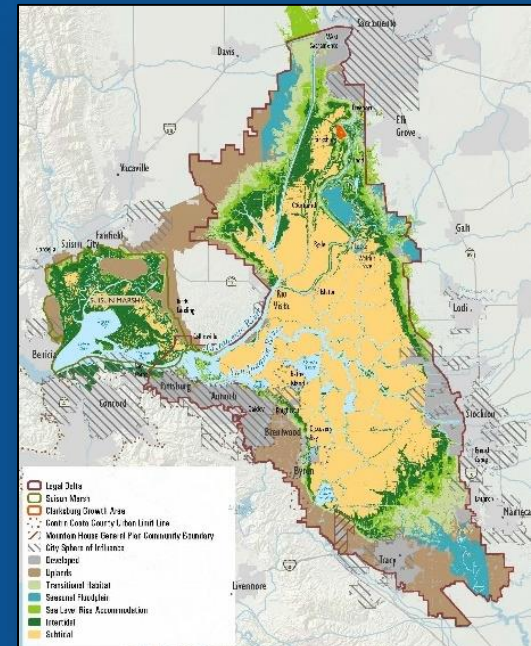
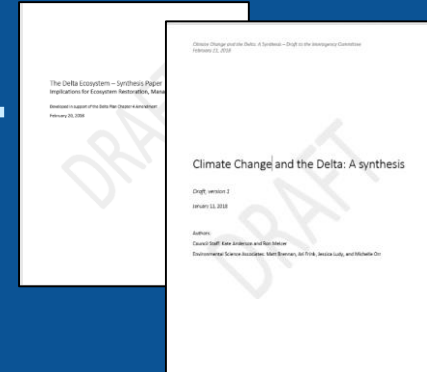
Science Synthesis Papers

Technical Analyses

Outreach

Refinement of Policies,
Recommendations, and
Performance Measures

Updating the Chapter
Narrative



Science Synthesis Papers - Process

Development:

- Council Staff
- Contractor Staff: ESA – Environmental Science Associates

Review:

- Science Program Peer Review
- Interagency Review
- Delta ISB Review

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← Working Draft Release

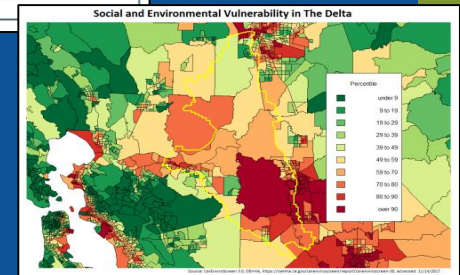
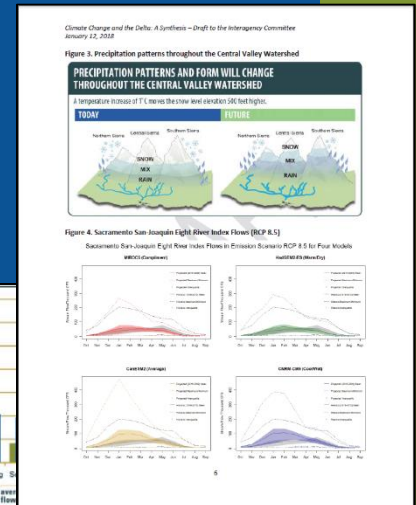
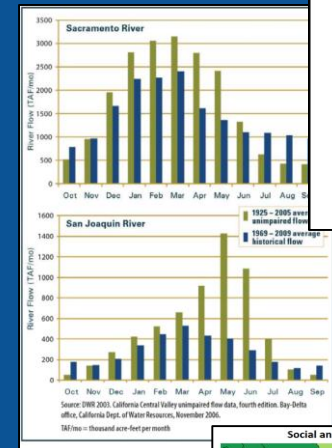
- Interagency Review
- Delta ISB Review

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Science Synthesis Papers - Scope

Provide the scientific basis for changes to the plan:

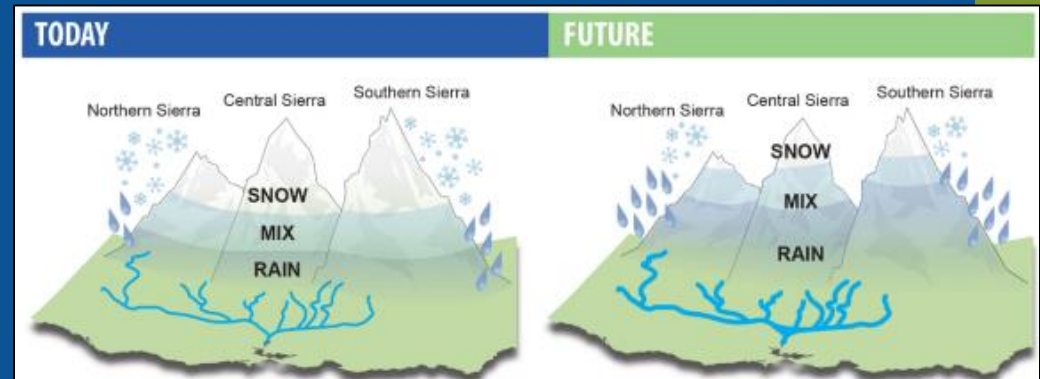
- Climate Change and the Delta: A synthesis
- Delta Ecosystems – Terrestrial, Aquatic, and the Food Web
- Conservation and Restoration Approaches



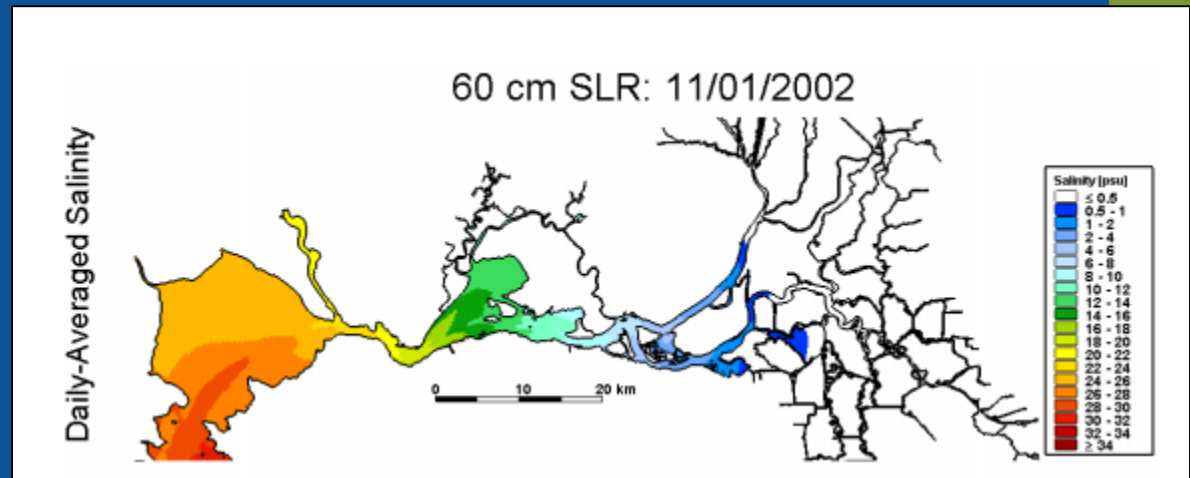
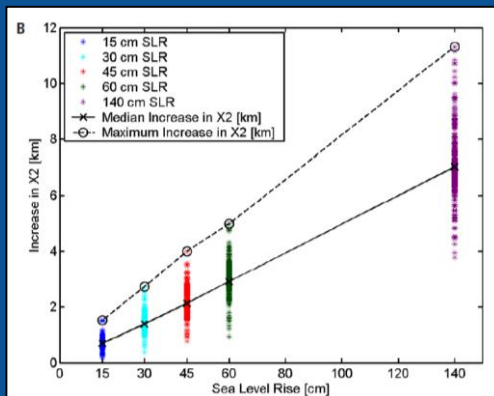
Climate Change

Climate change effects on rivers, floodplains, and biota:

- Increase in extreme precipitation and drought
- Δ floodplain inundation
- Temperature Stress
- Sea level rise
- Salinity



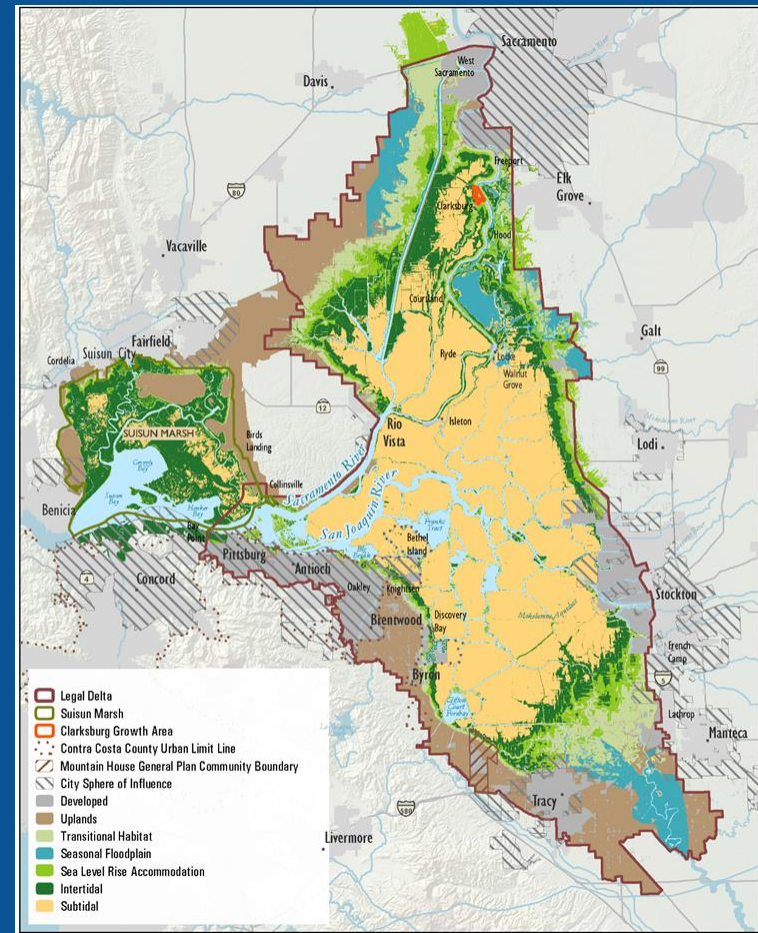
Source: DWR 2017



Climate Change

Considerations for practice and policy:

- Accommodation space
- Δ distribution of ecosystems
- Delta as a climate refuge
- Resilience and connectivity
- Uncertainty at multiple scales
- Adaptive decision-making and management
- Risk aversion-based planning tools (e.g. CalAdapt)

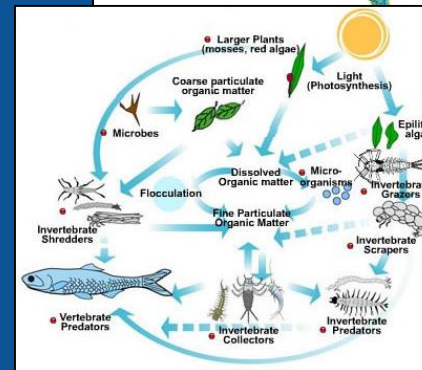
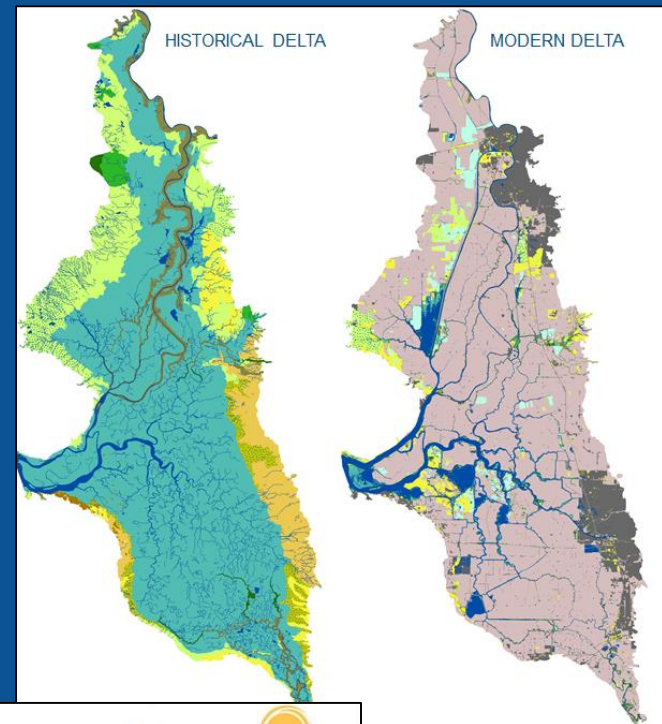


Habitats Types based on Elevation
Source: DP Figure 4-6, Adapted from DFG 2011

Delta Ecosystem

Estuary of global recognition – impaired by multiple stressors:

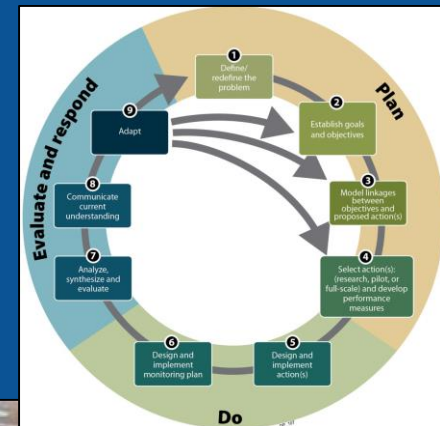
- Flow impairment
- Loss of floodplain connectivity and geomorphic process
- Land conversion
- Non-native species
- Low primary productivity
- Process – based restoration limited to date



Delta Ecosystem

Target recovery of ecological function:

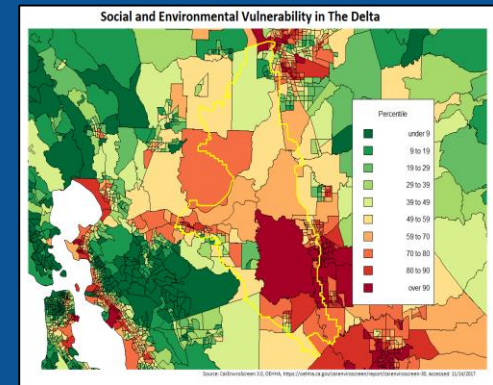
- Re-establish hydraulic connectivity, geomorphic functions, vegetation communities (process-based restoration)
- Novel conservation actions may provide opportunities to augment approaches
- Focus on recovering primary productivity
- Shift from endangered species impacts to broader ecosystem targets
- Consider geography of system
- Multiple planning horizons
- Leverage emerging tools in adaptive management (e.g. eDNA)



Conservation and Restoration

Achieving the Delta Reform Act will require a comprehensive, multifaceted, and balanced approach:

- Society depends directly on the biological integrity of its landscapes
- Ecological restoration = social and environmental risk reduction
- Integrated planning – SLR, urbanization, environmental risk
- Science evaluation of restoration and novel management actions
- Collaboration and cooperation required (Madani and Lund 2011)
- Clear and measurable objectives (Dybala et al. 2017)



CalEnviroScreen 3.0, OEHHA,
<https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30>,
accessed:11/14/2017



Ecosystem Amendment - Next Steps

- Ecosystem Amendment Open House – Courtland Auditorium, 5-7pm, February 22
- March – April: Synthesis Paper Interagency Review; ISB Restoration Subcommittee informal review; Finalize drafts
- Ongoing technical analyses
- Development of draft Performance Measure, Policy, and Recommendation refinements
- May: Council presentation on PMs, Policies, and Recommendations
- June/July: Council Presentation on draft Amendment/Environmental Review Project Description

Questions?

